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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/028,768	12/28/2001	Gee Sung Chae	2658-0281P	4297

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EXAMINER	
RICHARDS, N DREW	

ART UNIT	PAPER NUMBER
2815	

DATE MAILED: 10/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/028,768	CHAE, GEE SUNG	
	Examiner	Art Unit	
	N. Drew Richards	2815	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 July 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8 and 21-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-5,7,8,21-23,25 and 26* is/are rejected.

7)☒ Claim(s) *2,6 and 24* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Product-by-Process Limitations

1. While not objectionable, the Office reminds Applicant that "product by process" limitations in claims drawn to structure are directed to the product, per se, no matter how actually made. *In re Hirao*, 190 USPQ 15 at 17 (footnote 3). See also, *In re Brown*, 173 USPQ 685; *In re Luck*, 177 USPQ 523; *In re Fessmann*, 180 USPQ 324; *In re Avery*, 186 USPQ 161; *In re Wethheim,* 191 USPQ 90 (209 USPQ 554 does not deal with this issue); *In re Marosi et al.,* 218 USPQ 289; and particularly *In re Thorpe*, 227 USPQ 964, all of which make it clear that it is the patentability of the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or otherwise. Note that applicant has the burden of proof in such cases, as the above case law makes clear. Thus, no patentable weight will be given to those process steps which do not add structural limitations to the final product.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States

only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 3-5, 7, 8, 21-23, 25 and 26 rejected under 35 U.S.C. 102(e) as being anticipated by Song et al. (U.S. Patent No. 6,531,392 B2).

Song et al. disclose a liquid crystal display device in figure 4, for example, comprising:

- a substrate 10;
- a gate electrode 26 over the substrate;
- a first semiconductor layer 42 over the substrate; and
- a source electrode 56/76 and a drain electrode 55/75 over the first semiconductor layer 42, the source and drain electrodes having a first metal layer 55/56 and a second metal layer 75/76 formed in a same pattern and defining and forming a separation between the source and drain electrode;
- wherein the second metal layer is adapted to be a dry etching mask to pattern the first metal layer so that etched sidewalls of the first and second metal layer are substantially aligned instead of being over-etched.

The second metal layer is "adapted to" be a dry etching mask to pattern the first metal layer since the second metal layer overlies the first metal layer. It is noted that in the claim to the device, the dry etching step or using the second metal layer as a mask need not be actually performed. In this case, the second metal layer is configured in such a manner that it is capable of being used as a dry etching mask for the first metal layer and thus the metal layers anticipate the claimed structure. The limitation of the first metal layer being patterned by dry etching process using the second metal layer as

a mask is a product-by-process limitation that does not structurally distinguish over the prior art. The first and second metal layers are disclosed as being in the same pattern with substantially aligned side-walls and thus read on the structure as claimed regardless of the method by which it was fabricated.

The limitation of the etched side-walls being aligned instead of over-etched is met by Song et al. since figure 4 shows the side-walls aligned and not over-etched.

With regard to claim 3, the first metal layer includes molybdenum (column 8 lines 64-66, when the first metal layer is the dual layered structure it includes molybdenum silicide).

With regard to claim 4, the second metal layer includes aluminum (column 9 lines 16-20).

With regard to claim 5, Song et al. disclose a liquid crystal display device in figure 4, for example, comprising:

- a substrate 10;
- a gate electrode 26 over the substrate;
- a first semiconductor layer 42 over the substrate;
- a source electrode 56/76 and a drain electrode 55/75 over the first semiconductor layer 42, the source and drain electrodes including a first metal layer 55/56 and a second metal layer 75/76 formed patterned to form a separation between the source and drain electrodes;

- a second semiconductor layer beneath the first metal layer 55/56 and having a same pattern as the first metal layer (column 8 lines 64-66, when the first metal layer is the dual layered structure it includes a doped amorphous silicon layer); and
- wherein the second metal layer is adapted to be a dry etching mask to pattern the first metal layer so that etched sidewalls of the first and second metal layer are substantially aligned instead of being over-etched.

The second metal layer is "adapted to" be a dry etching mask to pattern the first metal layer since the second metal layer overlies the first metal layer. It is noted that in the claim to the device, the dry etching step or using the second metal layer as a mask need not be actually performed. In this case, the second metal layer is configured in such a manner that it is capable of being used as a dry etching mask for the first metal layer and thus the metal layers anticipate the claimed structure. The limitation of the first metal layer being patterned by dry etching process using the second metal layer as a mask is a product-by-process limitation that does not structurally distinguish over the prior art. The first and second metal layers are disclosed as being in the same pattern with substantially aligned side-walls and thus read on the structure as claimed regardless of the method by which it was fabricated.

The limitation of the etched side-walls being aligned instead of over-etched is met by Song et al. since figure 4 shows the side-walls aligned and not over-etched.

With regard to claim 7, the first metal layer includes molybdenum (column 8 lines 64-66, when the first metal layer is the dual layered structure it includes molybdenum silicide).

With regard to claim 8, the second metal layer includes aluminum (column 9 lines 16-20).

With regard to claims 21 and 22, Song et al. further disclose an ohmic contact layer 65/66 over the first semiconductor layer, wherein inner edges of the ohmic contact layer 65/66 facing the separation space are aligned with inner edges of the first metal layer (as seen in figure 4 the inner edges of layers 55/65/75/56/66/76 are aligned).

With regard to claim 23, Song et al. disclose a liquid crystal display device in figure 4, for example, comprising:

- a substrate 10;
- a gate electrode 26 over the substrate;
- a first semiconductor layer 42 over the substrate;
- an ohmic contact layer 65/66 over the first semiconductor layer;
- a source electrode 56/76 and a drain electrode 55/75 over the first semiconductor layer 42, the source and drain electrodes including a first metal layer 55/56 and a second metal layer 75/76 formed in a same pattern and defining a separation between the source and drain electrodes;

- wherein the second metal layer is adapted to be a dry etching mask to pattern the first metal layer so that etched sidewalls of the first and second metal layer are substantially aligned instead of being over-etched; and
- wherein inner edges of the ohmic contact layer 65/66 facing the separation space are aligned with inner edges of the first metal layer (as seen in figure 4 the inner edges of layers 55/65/75/56/66/76 are aligned).

The second metal layer is "adapted to" be a dry etching mask to pattern the first metal layer since the second metal layer overlies the first metal layer. It is noted that in the claim to the device, the dry etching step or using the second metal layer as a mask need not be actually performed. In this case, the second metal layer is configured in such a manner that it is capable of being used as a dry etching mask for the first metal layer and thus the metal layers anticipate the claimed structure. The limitation of the first metal layer being patterned by dry etching process using the second metal layer as a mask is a product-by-process limitation that does not structurally distinguish over the prior art. The first and second metal layers are disclosed as being in the same pattern with substantially aligned side-walls and thus read on the structure as claimed regardless of the method by which it was fabricated.

The limitation of the etched side-walls being aligned instead of over-etched is met by Song et al. since figure 4 shows the side-walls aligned and not over-etched.

With regard to claim 25, the first metal layer includes molybdenum (column 8 lines 64-66, when the first metal layer is the dual layered structure it includes molybdenum silicide).

With regard to claim 26, the second metal layer includes aluminum (column 9 lines 16-20).

Allowable Subject Matter

4. Claims 2, 6 and 24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

5. Applicant's arguments filed 7/22/05 have been fully considered but they are not persuasive.

Applicant has argued that the previous Office Action does not give patentable weight to the language reciting that the first metal layer is patterned by a dry etching process. This is not persuasive. The previous Office Action very clearly gave patentable weight to the disputed language. As previously explained, this language dealt with a process used to form the claimed product, thus a product-by-process limitation. The Office Action explained that the process claimed for forming the final product did not result in a structurally different final product than that of the reference.

Therefore, the Office Action did give the limitation patentable weight and clearly explained how the claims were anticipated by the reference.

Applicant cites a decision by the Court of Customs and Patent Appeals (In re Venezia, 189 USPQ 140 (CCPA 1976)), as a showing that the "capable of" language currently employed in their claims is definite as required by the second paragraph of section 112. This argument is moot since the Examiner has not rejected the claims as being indefinite.

Applicant then argues that the Office has not made out a *prima facie* case of anticipation of independent claims 1, 5 and 23 because the Office has not shown that Song discloses the second metal layer as a dry etching mask to pattern the first metal layer where side-walls of the first metal layer and the second metal layer are substantially aligned instead of being over-etched when the device is manufactured. First, in the previous Office Action, the Office indeed did not establish a *prima facie* case of anticipation for these limitations since these limitations had not yet been presented to the Office or amended into the claims. Second, in the rejections of this Office Action, the Office has now established their *prima facie* case of anticipation. The Office has established that the second metal layer of Song et al. figure 4 is above the first metal layer in a manner such that the second metal layer is capable (adapted to) of being used as a dry etching mask to pattern the first metal layer. Thus, the structure of Song et al. figure 4 anticipates the claims.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to N. Drew Richards whose telephone number is (571) 272-1736. The examiner can normally be reached on Monday-Friday 9:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on (571) 272-1664. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

NDR

TOM THOMAS
SUPERVISORY PATENT EXAMINER